

Crop Life Australia Resistance Management Guides

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CropLife Australia is a not-for-profit organisation that represents the innovators, developers, manufacturers, formulators and registrants of crop protection and ag-biotechnology products. To help ensure the longevity and viability of these products, CropLife Australia has developed resistance management strategies which are reviewed and updated annually by scientific technical review committees in consultation with national and international experts.

There are currently 4 strawberry-specific strategies in their collection, in addition to specific recommendations for many other target pests and diseases, and specific guidelines for different herbicide groups.

CropLife strawberry-specific strategies have been published for:

- Strawberry – Grey mould (*Botrytis*)
- Strawberry – Powdery mildew
- Strawberries / Ornamentals – Two-spotted mite (*Tertranychus urticae*)
- Strawberry runner production – Powdery mildew

Although the strawberry powdery mildew and botrytis management strategies are presented by CropLife Australia separately, it is useful to look at them together when planning spray applications as there is overlap between the fungicide groups and products used for both diseases.

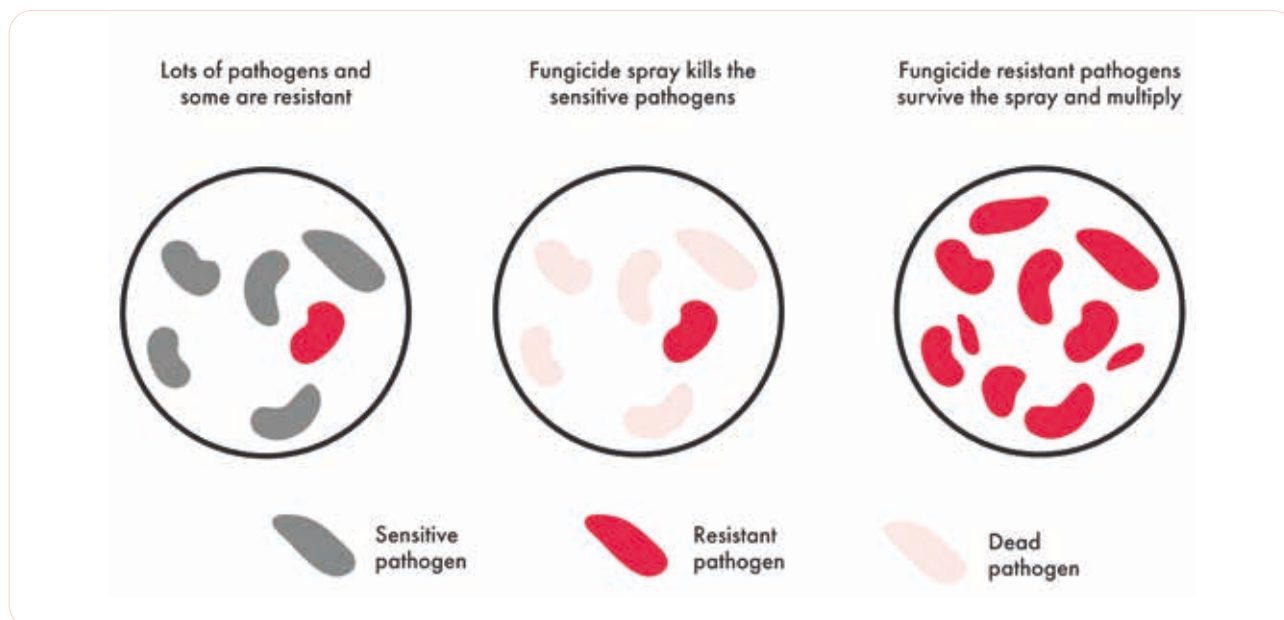


Figure 1. Simplified diagram of how fungicide resistance develops in a population. Pathogens may be resistant to more than one fungicide group.

Why are resistance strategies presented separately?

CropLife Australia does not publish combined guidelines for multiple pests and diseases affecting the same crop, as each presents unique biological resistance risks. Pests and pathogens differ in their life or infection cycles, mutation rates, and survival mechanisms. Although multiple pests and pathogens may coexist in a crop, resistance management strategies are developed separately to reflect these differences. A strategy suitable for one pest or pathogen may be too restrictive or ineffective for another.

Table 1 shows all the single-site fungicide groups currently registered* for use in strawberries (not including runner production). Table 2 shows the strawberry spray recommendations by mode of action group.

Table 1. Registered single-site fungicide groups for botrytis and powdery mildew in fruiting strawberries.

Mode of Action Fungicide group	Fungicide family	Registered disease
Group 2	Dicarboximide	Botrytis
Group 3	Demethylation inhibitors (DMI)	Powdery mildew
Group 7	Succinate dehydrogenase inhibitors (SDHI)	Botrytis; Powdery mildew
Group 7 + 3	SDHI + DMI	Botrytis
Group 7 + 11	SDHI + Quinone outside inhibitors	Botrytis; Powdery mildew
Group 7 + 12	SDHI + phenylpyrroles (PP)	Botrytis; Powdery mildew
Group 9	Anilinopyrimidine (AP)	Botrytis
Group 9 + 12	AP + PP	Botrytis
Group 11	Quinone outside inhibitors	Powdery mildew
Group 17	Hydroxyanilide	Botrytis
Group 19	Chitin synthase inhibitor	Botrytis; Powdery mildew
Group 21	Quinoline inside Inhibitor	Botrytis; Powdery mildew
Group 52 (U)	Dihydroorotate dehydrogenase inhibitor	Botrytis
Group U6	Phenyl-acetamide	Powdery mildew

*This information is current only at the time of publication (December 2025). Please ensure that you always check the status of a permit or label registration prior to chemical use.

Table 2: Strawberry spray recommendations by mode of action group. Adapted from CropLife Australia resistance management strategies for strawberry botrytis and powdery mildew (2025).

Fungicide Group(s)		2	3	7 7 + 3 ¹ 7 + 11 7 + 12	9 9 + 12	11	12 12 + 7 12 + 9	17 (solo) ²	19	21 ³	52	U6
Maximum number of consecutive applications	Botrytis	2	-	2	2	-	2	1	2	2	2	-
	Powdery	-	2	2	-	1	-	-	2	2	-	1
Maximum number of sprays per crop/season	Botrytis	2-3	-	3 or 1 in 3 (33%) whichever is lower	3 or 1 in 3 (33%) whichever is lower	-	3 or 1 in 3 (33%) whichever is lower	3 or 1 in 3 (33%) whichever is lower	6 or 1 in 2 (50%) whichever is lower	3 or 1 in 3 (33%) whichever is lower	3 or 1 in 3 (33%) whichever is lower	-
	Powdery	-	4	3	-	3 or 1 in 3 (33%) whichever is lower	-	-	6 or 1 in 2 (50%) whichever is lower	3 or 1 in 3 (33%) whichever is lower	-	2

1 **Group 7+3** formulation (Tebuconazole + fluopyram) is registered for botrytis only.

2 **Group 17** may be applied in up to two consecutive applications if applied with an effective mixing partner, or a different Group. Do not apply **Group 17 containing mixtures** for more than 50% of all applications.

3 Where there are several crop cycles per year, up to a maximum of five (5) applications containing **Group 21** can be applied.

The following guidance points are a summary of the guidelines provided in the CropLife Australia resistance management strategies for strawberry botrytis and powdery mildew (2025).

Powdery mildew specific guidance:

- Do not use the same fungicide group as the last application on runner production and the first application to in-field fruit production.
- Apply a program of protectant (multi-site) fungicides from early crop establishment and maintain a regular spray program throughout the crop growing cycle.
- Do not use **Group 3, 7, 11, 19, 21** or **U6** fungicides as eradicants (once symptoms are visible).

Botrytis specific guidance:

- Apply a program of protectant (multi-site) fungicides during flowering.

Fungicide group specific guidance:

- Do not apply more than four **Group 3** sprays per season.
- Do not apply more than two consecutive sprays of **Group 2, 3, 7** (including 7+3, 7+11 or 7+12), **9, 12, 17, 19** or **21** fungicides, including from one season to the next.
- Do not apply **Groups 52** or **17 (solo)** as consecutive applications, or more than 3 times per season.
- If using **Group 17** with an effective mixing partner, or a different Group, do not apply the **Group 17 containing mixtures** for more than 50% of all applications.
- Do not apply more than three **Group 7** containing sprays per season. If consecutive sprays are used, then use the same number of sprays of an alternative group before using another Group 7, including sprays in consecutive seasons.

- Do not apply consecutive sprays of **Group 11** or **U6** fungicides, including from one season to the next.
- If three or fewer fungicide sprays are applied per crop, use only one spray containing a **Group 9, 11, 12** or **21**. Use a maximum of three sprays containing a **Group 9, 11, 12** or **21** fungicide, or 33% of total sprays (whichever is lower).
- Do not apply **Group 19** fungicides more than 6 times per season, or for more than 50% of the total number of fungicide sprays.
- Do not apply more than two **Group U6** sprays per crop.

NOTE: Always refer to the label. Resistance management strategies do not replace product labels, they supplement them.

**** Remember to use your multi-sites ****

Maximise the use of multi-site (protectant) fungicides throughout the season (e.g. Captan®, thiram, sulphur, potassium bicarbonate formulations, and biological products). Multi-site fungicides shield leaf and fruit surfaces from fungal pathogens and have proven to be an excellent stand-alone method of managing disease in some circumstances. They act on multiple parts of the pathogen, unlike single-site fungicides that only act on one part, so resistance to multi-site fungicides is low.

Find out more at the CropLife Australia website www.croplife.org.au